WHAT IS CLAIMED IS:

1. An amorphous film having an aligned atomic structure disposed on a substrate prepared by a method comprising the step of:

bombarding said substrate with at least one ion beam from at least one ion beam source at a designated incident angle, wherein said ion beam has an energy from about 100 to 300 eV and said designated incident angle is from about 25 to about 60 degrees and wherein said amorphous film is a diamond-like carbon film, to simultaneously (a) deposit said amorphous film onto said substrate, and (b) arrange said atomic structure of said amorphous film in at least one predetermined aligned direction.

2. The amorphous film of claim 1, wherein said designated incident angle produces a net deposition on a surface of said substrate.

3. The amorphous film of claim 1, wherein said ion beam comprises impinging species and wherein the energy of said impinging species is kept below the energy required for etching said amorphous film on a surface of said substrate.

4. The amorphous film of claim 1, wherein said ion beam is generated by a process comprising the steps of:

introducing a carbon-containing gas into a discharge chamber of a source of said ion beam;

ionizing said carbon-containing gas in said discharge chamber to produce said ion beam comprising ions; and

applying sufficient voltage to said ion beam to accelerate said ions out of said ion beam source.

5. The amorphous film of claim 4, wherein said ion beam has an energy from about 200 to 300 eV.

6. The amorphous film of claim 1, wherein said ion beam is generated using an ion gun.

7. The amorphous film of claim 1, wherein said ion beam further comprises neutral molecules.

8. The amorphous film of claim 1, wherein said bombarding is carried out simultaneously using a first ion beam and a second ion beam.

9. The amorphous film of claim 8, wherein said designated incident angle in said first ion beam is different from the designated incident angle of said second ion beam.

10. The amorphous film of claim 1, wherein said designated incident angle varies over time.

11. The amorphous film of claim 1, wherein said amorphous film is optically transparent in the visible spectrum.

12. The amorphous film of claim 1, further comprising the step of:

placing a collimnator in the path of said ion beam between said substrate and said ion beam source at a designated incident angle to sputter material of said collimnator onto said substrate.

13. The amorphous film of claim 1, further comprising the step of:

moving said substrate or said ion beam source relative to the other over time.

14. An amorphous film having an aligned atomic structure disposed on a substrate prepared by a method comprising the step of:

bombarding a collimnator placed in the path of an ion beam from an ion beam source between said substrate and said ion beam source at a designated incident angle, wherein said ion beam has an energy from about 100 to 300 eV and said designated incident angle is from about 25 to about 60 degrees and wherein said amorphous film is a diamond-like carbon film, to sputter material of said collimnator onto said substrate and to simultaneously (a) deposit said amorphous film onto said substrate and (b) arrange said atomic structure of said amorphous film in at least one predetermined aligned direction.

15. An amorphous film having an aligned atomic structure disposed on a substrate prepared by a method comprising the steps of:

introducing a carbon-containing gas into a discharge chamber of an ion beam source;

ionizing said carbon-containing gas in said discharge chamber to produce an ion beam comprising ions;

applying sufficient voltage to said ion beam to accelerate said ions out of said ion beam source; and

bombarding said substrate with at least one ion beam from at least one ion beam source at a designated incident angle, wherein said ion beam has an energy from about 100 to 300 eV and said designated incident angle is from about 25 to about 60 degrees and wherein said amorphous film is a diamond-like carbon film, to simultaneously (a) deposit said amorphous film onto said substrate, and (b) arrange said atomic structure of said amorphous film in at least one predetermined aligned direction.

16. An apparatus for depositing an amorphous film having an aligned atomic structure on a substrate, comprising:

at least one ion beam source disposed at a designated incident angle of from about 25 to about 60 degrees capable of producing at least one ion beam having an energy from about 100 to 300 eV for bombarding said substrate with said ion beam to simultaneously (a) deposit said amorphous film onto said substrate, and (b) arrange said atomic structure of said amorphous film in at least one predetermined aligned direction.

17. The apparatus of claim 16, wherein said amorphous film is optically transparent in the visible spectrum

18. The apparatus of claim 16, wherein said amorphous film is a diamond-like carbon film.

19. The apparatus of claim 16, wherein said designated incident angle produces a net deposition on a surface of said substrate.

20. The apparatus of claim 16, wherein said ion beam comprises impinging species and wherein the energy of said impinging species is kept below the energy required for etching said amorphous film on a surface of said substrate.

21. The apparatus of claim 16, wherein said ion beam is generated by a process comprising the steps of:

introducing a carbon-containing gas into a discharge chamber of a source of said ion beam;

ionizing said carbon-containing gas in said discharge chamber to produce said ion beam comprising ions; and

applying sufficient voltage to said ion beam to accelerate said ions out of said ion beam source.

22. The apparatus of claim 16, wherein said ion beam has an energy from about 200 to 300 eV.

23. The apparatus of claim 16, wherein said ion beam source is an ion gun.

24. The apparatus of claim 16, wherein said ion beam further comprises neutral molecules.

25. The apparatus of claim 16, further comprising:
means for moving said substrate relative to said ion beam source.

26. The apparatus of claim 16, further comprising:
means for moving said ion beam source relative to said substrate.

27. The apparatus of claim 16, wherein said ion beam source comprises a first ion beam source to produce a first ion beam and a second ion beam source to produce a second ion beam for bombarding simultaneously with said first and said second ion beams.

28. The apparatus of claim 27, further comprising:
means for moving at least one ion beam source relative to the others and relative to said substrate.

29. The apparatus of claim 27, further comprising:
means for varying said designated incident angle in said first or said second ion beam such that said designated incident angle in said first or

said second ion beam is different from the designated incident angle of the other.

30. The apparatus of claim 27, further comprising:

means for varying said designated incident angle in said first or said second ion beam over time.

31. The apparatus of claim 27, further comprising:

means for moving said substrate or said ion beam source relative to the other over time.

32. The apparatus of claim 16, further comprising:

a collimnator in the path of said ion beam between said substrate and said ion beam source at a designated incident angle for sputtering material of said collimnator onto said substrate.

33. The apparatus of claim 32, further comprising:

means for moving said substrate or said ion beam source relative to the other and to said collimnator over time.

34. An apparatus for depositing an amorphous film having an aligned atomic structure on a substrate, comprising:

at least one ion beam source disposed at a designated incident angle of from about 25 to about 60 degrees capable of producing at least one ion beam having an energy from about 100 to 300 eV; and

a collimnator placed in the path of said ion beam produced from said ion beam source between said substrate and said ion beam source at a designated incident angle with said ion beam for bombarding said collimnator to sputter material of said collimnator onto said substrate and thereby simultaneously (a) deposit said amorphous film onto said

substrate and (b) arrange said atomic structure of said amorphous film in at least one predetermined aligned direction.

35. The apparatus of claim 34, wherein said ion beam is produced by a method comprising the steps of:

introducing a carbon-containing gas into a discharge chamber of an ion beam source;

ionizing said carbon-containing gas in said discharge chamber to produce an ion beam comprising ions;

applying sufficient voltage to said ion beam to accelerate said ions out of said ion beam source to produce at least one ion beam from said ion beam source.

36. The apparatus of claim 34, wherein said amorphous film is optically transparent in the visible spectrum

37. The apparatus of claim 34, wherein said amorphous film is a diamond-like carbon film.

38. The apparatus of claim 35, wherein said designated incident angle produces a net deposition on a surface of said substrate.